

## CALIFORNIA AIR RESOURCES BOARD

### NOTICE OF PUBLIC MEETING TO CONSIDER A STATUS REPORT ON THE ZERO-EMISSION BUS REGULATION

The Air Resources Board (ARB or Board) will conduct a public meeting at the time and place noted below to consider an informational update on the implementation of the Zero-Emission Bus (ZBus) regulation purchase requirement.

DATE: July 23, 2009

TIME: 9:00 a.m.

PLACE: County Administration Center  
1600 Pacific Highway  
Board Chambers Room 310  
San Diego, California 92101

This item will be considered at a one-day meeting of the Board, which will commence at 9:00 a.m., July 23, 2009. Please consult the agenda for the meeting, which will be available at least 10 days before, to determine the approximate time for which this item will be considered.

If you require special accommodations or language needs, please contact the Clerk of the Board at (916) 322-5594 or by Fax at (916) 322-3928 as soon as possible, but no later than 10 business days before the scheduled Board hearing. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

As directed in 2006, the staff will present the Board with a review of the technologies and the feasibility of implementing the ZBus purchase requirement that is part of the transit agency fleet regulations. The original ZBus purchase requirement was adopted into regulation in 2000 and the Board has since modified the requirement two times. The most recent modifications in 2006 included an advanced demonstration requirement for diesel path transit agencies and an extension of the ZBus purchase requirement until 2026.

The current regulation includes a purchase requirement for large transit agencies (those with more than 200 buses). For transit agencies on the diesel fuel path, a minimum of 15 percent of purchases and leases, when aggregated annually, for 2011 through 2026 model-year urban buses must be ZBuses. For transit agencies on the alternative fuel path, the 15 percent ZBus purchase requirement starts with model year 2012 and runs through model year 2026. A transit agency introducing a ZBus earlier than required will earn credits that may be used in meeting the overall purchase requirement.

Staff's review of the technologies and the feasibility of implementing the ZBus purchase requirement is intended to provide the Board with an opportunity to reassess and decide whether to proceed with, or to adjust, the current purchase requirement.

In 2006, when the Board directed staff's review, the Board recommended staff's consideration of the following implementation criteria:

**Table 1: Implementation Criteria**

	Implementation Criteria
Purchase Cost Fuel Cell vs. Electric Trolley Bus	1.25 : 1
Fuel Cell Durability or Warranty	20,000 hours
Reliability (Miles between Propulsion Related Road Calls)	10,000 miles

**Technology Status:** To date, two ZBus demonstrations have been initiated by large transit agencies and one optional ZBus demonstration is underway by a non-regulated transit agency. Of the three demonstrations, one is complete while the other two are ongoing. Operation results from the demonstrations show improved fuel efficiency but reduced availability and reliability when compared to a similar diesel bus. An advanced demonstration of 12 ZBuses has been initiated by a joint partnership of five Bay Area transit agencies and is scheduled to begin mid 2010. Delays in securing funds and in bus production have caused the demonstration timeline to slip by approximately 18 months from what had been planned. Staff had hoped to have operational data from the Bay Area's advanced demonstration for this report; however, those data will not be available until at least December 2011.

In addition to the above efforts in California, a battery dominant ZBus will be deployed by the City of Burbank in the fall of this year. ZBus demonstrations are also scheduled for South Carolina and Connecticut here in the U.S. and current demonstrations are taking place in Brazil, China, Hamburg, Amsterdam, and Brussels with planned demonstrations coming to London and Vancouver.

ZBus technology remains expensive. A fuel cell bus costs approximately \$2.2 million which is 1.8 times the cost of an electric trolley bus and nearly six times the cost of a diesel transit bus. In addition, results from the first ZBus demonstrations showed the average fuel cell durability to be 3,000 hours and the average reliability to be 1,100 miles between road calls. In comparison to the implementation criteria as identified in Table 1, these early demonstrations indicate that ZBus technology is still developing.

**Proposed Next Steps:** Based on the delay in implementing the advanced demonstration and given the continued high cost of ZBus technologies, staff is recommending a delay in the ZBus purchase requirement. Staff recommends establishing implementation criteria within the regulation, similar to the criteria identified in Table 1, specifying key technology attainment goals that must be achieved prior to implementing a mandatory purchase requirement. Furthermore, staff also recommends that once implemented, the purchase requirement be aligned for all large transit

agencies regardless of fuel path. Finally, staff recommends that the purchase requirement be gradually phased in, allowing for a ramp-up period that will ultimately reach the current 15 percent purchase requirement.

Staff will also discuss a longer term concept that broadens the requirements to reduce transit green house gas emissions while incentivizing innovation and increased transit ridership.

ARB staff will make an oral presentation at the meeting. Copies of the presentation may be obtained from ARB's website at <http://www.arb.ca.gov/msprog/bus/zeb/zeb.htm>.

Interested members of the public may also present comments orally or in writing at the meeting, and in writing or by email before the meeting. To be considered by the Board, written comments submissions not physically submitted at the meeting must be received **no later than 12:00 noon, July 22, 2009**, and addressed to the following:

Postal mail: Clerk of the Board, Air Resources Board  
1001 I Street, Sacramento, California 95814

Electronic submittal: <http://www.arb.ca.gov/lispub/comm/bclist.php>

Please note that under the California Public Records Act (Government Code section 6250 et seq.), your written and oral comments, attachments, and associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request. Additionally, this information may become available via Google, Yahoo, and any other search engines.

The Board requests, but does not require 20 copies of any written submission. Also, ARB requests that written and email statements be filed at least 10 days prior to the meeting so that ARB staff and Board members have time to fully consider each comment. Further inquiries regarding this matter should be directed to Mr. Craig Duehring, Air Resources Engineer, at (916) 323-2361, or to Mr. Gerhard Achtelik, Manager, ZEV Infrastructure Section, at (916) 323-8973.

CALIFORNIA AIR RESOURCES BOARD

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James N. Goldstene  
Executive Officer

Date: July 7, 2009

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at [www.arb.ca.gov](http://www.arb.ca.gov).*